Lower Miller River Floodplain Restoration Project

South Fork Skykomish subbasin

Snohomish Basin Salmon Recovery Technical Committee

Denise Di Santo and Todd Hurley, King County

Habitat Limiting Factors and Species Recovery Planning

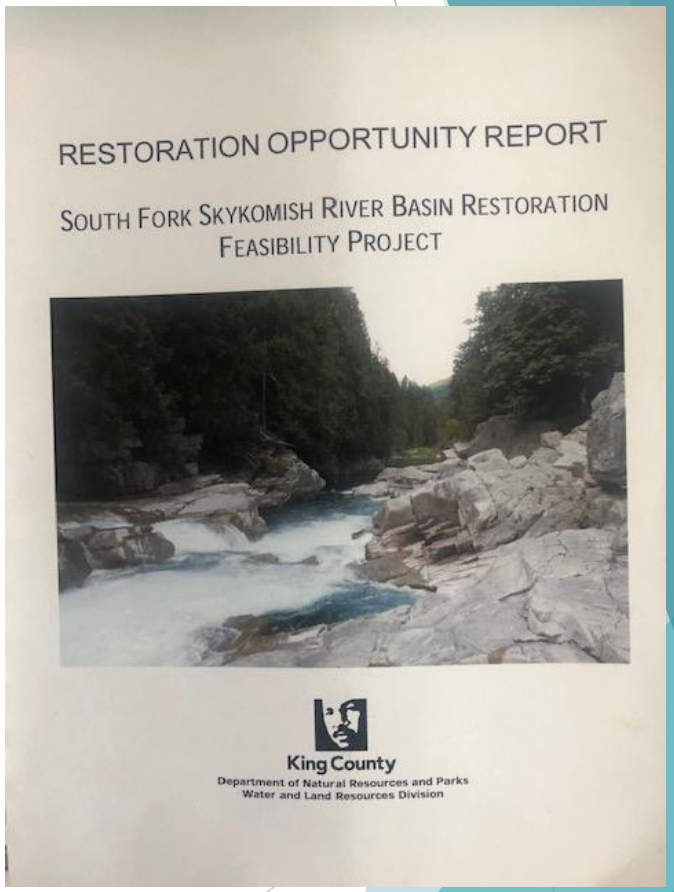
- Miller River alluvial fan is in a “primary restoration” subbasin (Snohomish Basin Salmon Recovery Forum 2005)
- High priority restoration targets for the King County portion of WRIA 7, including 80 acres of restored off channel habitat and 5.5 miles of restored edge habitat (King County 2011).
- Restoration of the lower Miller River has been identified as a key element of fulfilling King County’s commitment to achieve these targets (King County 2011).
- USFS identified the lower reach of Miller River as an area of concern due to impairment of channel processes; designated floodplain restoration here as a high priority within the Skykomish River Watershed (USFS 2009).

Fish Use in Miller River

- Summer/fall Chinook salmon (*Oncorhynchus tshawytscha*)
- Coho salmon (*O. kisutch*)
- Odd-year pink salmon (*O. gorbuscha*)
- Summer steelhead and rainbow trout (*O. mykiss*)
- Bull trout/Dolly Varden (*Salvelinus confluentus/S. malma malma*)
- Cutthroat trout (*O. clarki clarki*) (King County 2011; WDFW 2012a, 2012b).
- Fall chum salmon (*O. keta*) in the South Fork at confluence with the Miller River, not in the Miller River itself.

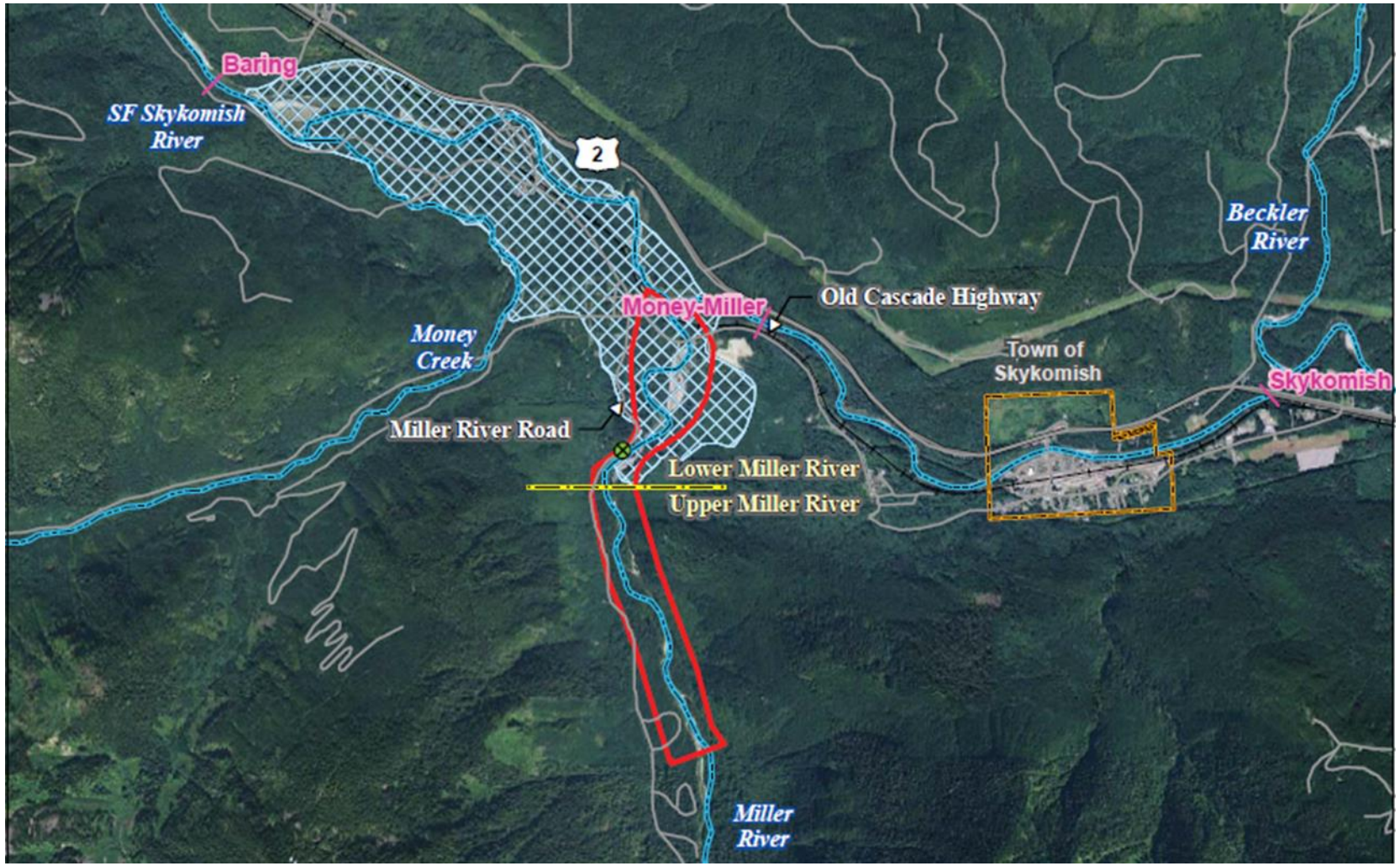
2013 Restoration Opportunity Report

- Goal and Objectives of completed study
- Assess the feasibility of restoring physical processes and habitat in the lower Miller River, with 3 objectives:
- 1) estimate the flood inundation frequency and geomorphic hazards on the alluvial fan
- 2) characterize existing aquatic habitat conditions & fish species use
- 3) identify restoration alternatives that address habitat impacts associated with infrastructure, and other factors limiting aquatic habitat in the study area.



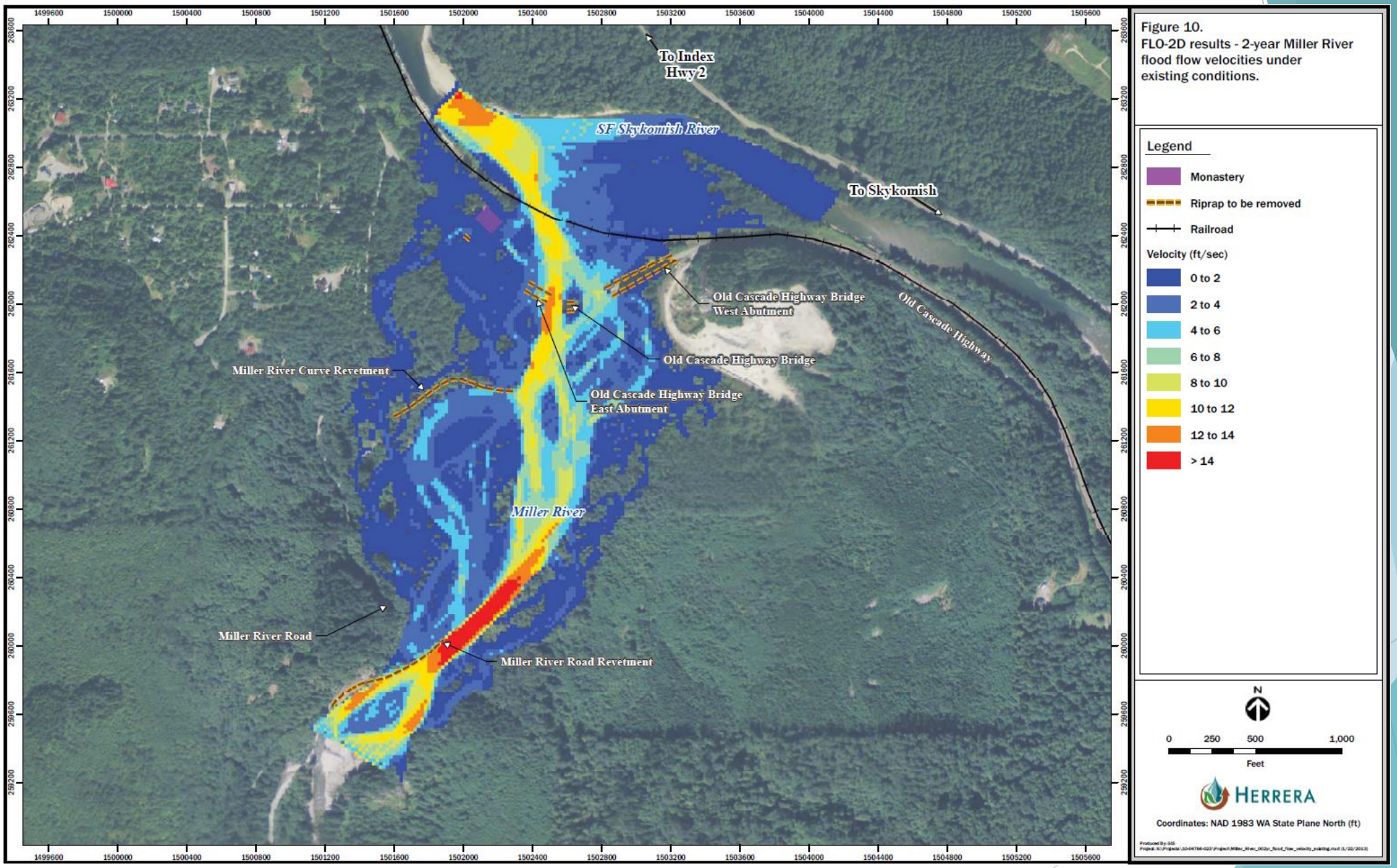
Feasibility Assessment and Reconnaissance

- Reviewed 2013 Feasibility Study
- Visited Site
- Reviewed Ownership
- Met with WRIA 7/SWF staff to discuss funding opportunities and priorities
- Met with KC Roads staff to understand status and potential constraints related to road removal
- Developed preliminary habitat and risk analysis including identification of major uncertainties
- Prepared Quick Look Site Assessment (QLSA) to demonstrate level of readiness
- Developed Conceptual Project Schedule and Funding Plan



Project (study) site location

Lower Miller River study site encompasses lower 2 miles of the river to the confluence of the S. Fork Skykomish River


To Index
Hwy 2
SF Skykomish River
To Skykomish
Old Cascade Highway Bridge
West Abutment
Old Cascade Highway
Old Cascade Highway Bridge
Miller River Curve Revetment
Old Cascade Highway Bridge
East Abutment
Miller River
Miller River Road
Miller River Road Revetment
Figure 10.
FLO-2D results - 2-year Miller River flood flow velocities under existing conditions.
Legend
Monastery
Riprap to be removed
Railroad
Velocity (ft/sec)
0 to 2
2 to 4
4 to 6
6 to 8
8 to 10
10 to 12
12 to 14
> 14
N
0
250
500
1,000
Feet
HERRERA
Coordinates: NAD 1983 WA State Plane North (ft)

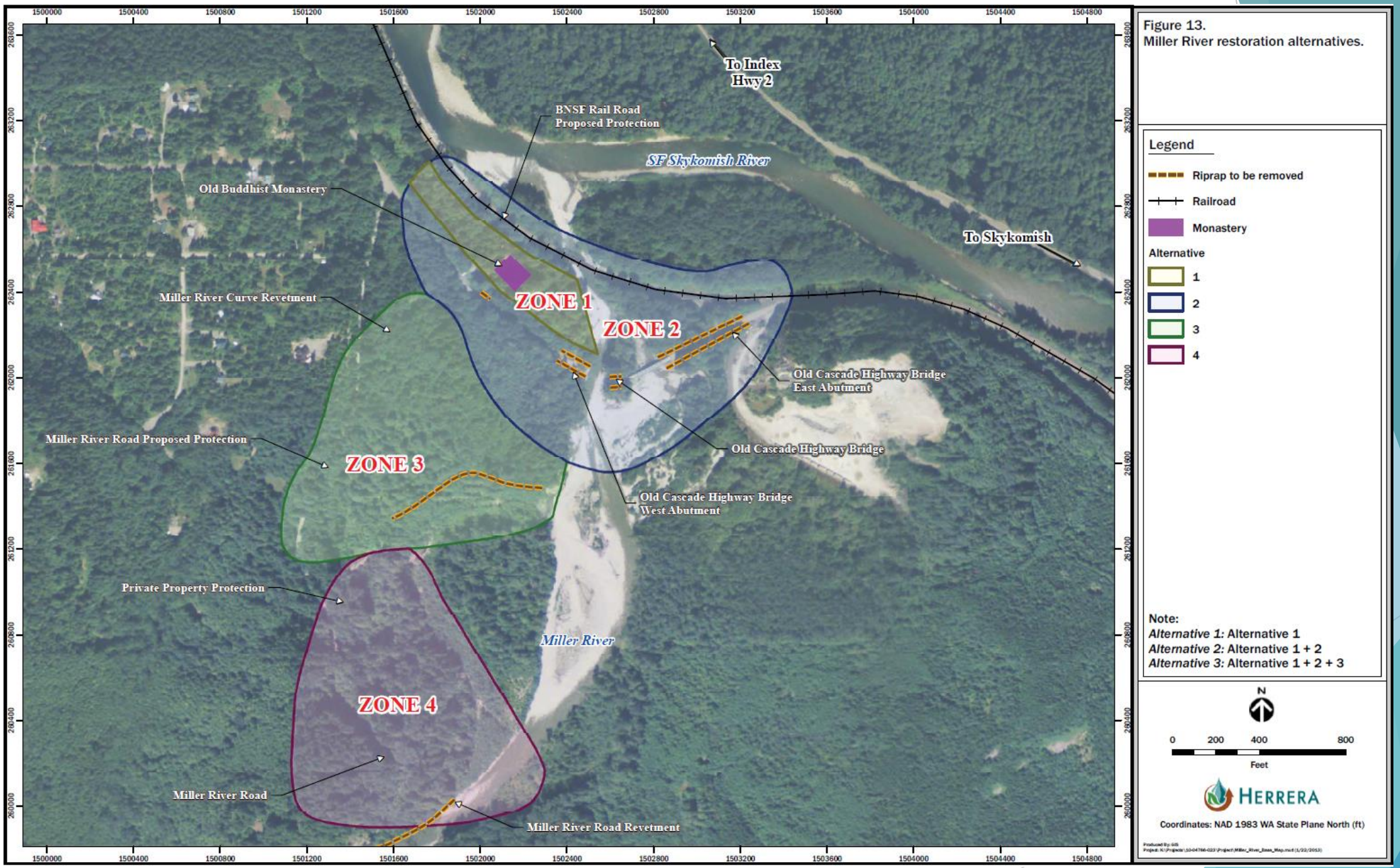


Figure 13.
Miller River restoration alternatives.

Anticipated Project Elements:
Old Cascade HWY Road and Bridge Removal

Anticipated Project Elements: Right Bank Protection Removal

Anticipated Project Elements: Left Bank Levee and Revetment Removal and Side Channel Connection

Potential Habitat Improvements

- Sustained Increase in Floodplain Connection
- Improved Off-Channel Habitat Complexity
- Increased Large Wood Recruitment
- Increased Large Wood trapping
- Improved Edge habitat

Potential Impacts and Risks

- Railroad Bridge, Trestle and Fill Prism all vulnerable to any increase in scour, channel migration or significant large wood accumulation.
- Overhead Utilities -Power and Phone?
- Underground Utilities (likely unaffected if present?)
- Miller River Road
- Private Properties in the “Town of Berlin”
- Private Quarry and Railroad spur
- Recreational Users

Miller River Restoration Preliminary Feasibility/Uncertainty and Risk	Existing Conditions/Risks			Uncertainty of Project Effects			Preliminary Project Related Increase in Risk or Habitat			Future Projected Condition/Risk with Road and Facility Removal Only			Required to reduce uncertainty and inform design	
Feasibility Issue	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High	Technical Information and analysis	Outreach and Coordination
Geologist's preliminary view of Hazards. Red is bad in this section.														
Flood Hazard Code Compliance	NA				x			x		NA			x	
Risk to LB Railroad Fill Prism		x			x			x			x		x	x
Risk to Right Bank Trestle		x			x				x			x	x	x
Risk to RR Bridge			x		x			x				x	x	x
Risk to Miller River Road	x				x			x			x		x	x
Risk to "Berlin" Properties		x				x		x				x		
Risk to Quarry	x				x		x			x			x	x
Risk to Recreational Users	x				x		x			x			x	x
Risk to Utilities			x	x			x					x		x
Geologist's preliminary view of Habitat. Red is good in this section.														
Sustainable Floodplain Connection		x			x			x				x	x	
Off-Channel Habitat Complexity		x			x			x				x	x	
Large Wood Recruitment	x			x				x			x		x	
Large Wood Trapping	x			x				x			x		x	
Edge habitat		x		x				x				x	x	

Preliminary Feasibility: Habitat, Risk and Uncertainty

Questions …comments?

- Denise Di Santo, Basin Steward, WLRD-RRSS

ddisanto@kingcounty.gov

- Todd Hurley, Geologist, WLRD-ERES

Todd.Hurley@kingcounty.gov